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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BUDD, PAUL A	

ART UNIT	PAPER NUMBER
2815	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/559,903	YIN ET AL.	
	Examiner	Art Unit	
	PAUL A. BUDD	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *27,36-38 and 44-52* is/are pending in the application.

4a) Of the above claim(s) *33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27,36-38 and 44-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3 July 2008 has been entered.

Response to Amendment

2. Claims **27, 36-38** and **44-52** are now pending in this application. Claims **27, 44, 47, 50** and **52** are amended, claim **33** is canceled, no claims are added and no new matter is entered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims **27, 36-38,** and **44-52** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar et al. (US Pat. 6,541,164, hereinafter Kumar) in view of Applicant's admitted prior art (hereinafter APA), or in the alternative, as being

unpatentable over Kumar in view of the APA and Chen et al. (US Pat. 4,905,073, hereinafter Chen).

Regarding claims **27** and **44**, Figures 2, 11, 14, and 17 of Kumar disclose a gate stack, comprising: a gate oxide layer 14 over a semiconductor substrate 12; a polysilicon layer 16a on the gate oxide layer; a metal silicide layer 22 on the polysilicon layer; an antireflection layer 18 comprising SixNyOz:H (col. 9, lines 1-7) formed over and in physical contact with the metal silicide layer, further wherein a thickness of the layer comprising SixNyOz:H ranges between a value that is greater than about 300 Angstroms (Å) to a value of approximately 650 Å **[**On column 30, lines 58-61 Kumar discloses his optimized thickness of 300 Angstroms which is at the lower end ("greater than about 300 angstroms" ["about 300 angstroms" includes 300 angstroms as well as a finite range of values below 300 angstroms]) of the claimed range and thus still anticipates it. Regardless, it would have been obvious to adjust the thickness of the antireflective layer of Kumar to arrive at the specified claimed thickness range, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It is known that the thickness of antireflection layer affects the scattering of the incident light, therefore the claimed thickness is a result effective variable. The applicant admits in his disclosure on page 12, "*Such adjustment of stoichiometry can be adjusted with routine experimentation utilizing methods known to persons of ordinary skill in the art. Another way of describing the adjustment of layers 24 and 50 is that layers 24 and 50*

can be tuned in thickness (by adjusting thickness of one or both of layers 24 and 50) and stoichiometry (by adjusting a stoichiometry of layer 50) such that reflection back into an overlying layer of photoresist is minimized". Such adjustment of the ARC thickness is only discovering an optimum value of a result effective variable that involves only routine skill in the art.**]**; and

a silicon nitride layer 23 (col. 9, lines 35-37) on the layer comprising *SixNyOz:H,* and having a thickness greater than 1000 Å [on page 4 lines 7-9 of the applicant's disclosure the applicant's admitted prior art (APA), the applicant discloses such a nitride layer having a thickness greater than 1000 Å], *wherein the polysilicon layer, the gate oxide layer, the metal silicide layer, the layer comprising SixNyOz:H, and the silicon nitride layer are patterned to form the gate stack. Kumar does not disclose the specific composition claimed. Figure 3 of the instant application discloses an antireflective layer 26 made of SixNyOz:H, wherein x is from 0.39 to 0.65, y is from 0.02 to 0.56, and z is from 0.05 to 0.33 (see page 3, lines 13-15 of the instant specification). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Kumar by using the antireflective layer composition as taught by the APA for the purpose of selecting a material known to be used for the same purpose. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp.,* 325 U.S. 327, 65 USPQ 297 (1945) (see MPEP 2144.07). As indicated above, both the composition of Kumar and the composition of the APA are known, and they are known to be used for antireflective layers.

The ordinary artisan would have been able to substitute the composition of Kumar with that disclosed by the APA without undue experimentation, and the results of that substitution would have been predictable. Therefore, it would have been obvious to one of ordinary skill in the art to substitute one composition for the other to achieve the predictable result of obtaining an antireflective film. *KSR International Co. v. Teleflex Inc.,* 82 USPQ2d 1385 (2007).

Furthermore, since composition of Kumar contains all the same elements as the claimed composition (Si, N, O, and H), the difference between Kumar and the claimed invention is simply in the specific claimed values for variable x, y, and z (i.e., the specific amounts of each compositional element). However, it would have been obvious to adjust the amounts of the various different elements in the antireflective layer of Kumar to arrive at the specified claimed composition, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It is known that the composition of an antireflection layer affects the optical properties, therefore the claimed variables are result effective variables.

The limitations "annealed metal silicide layer" and "the annealed metal silicide layer being the product of a process in which the metal silicide layer is subjected to an anneal treatment after the layer comprising SixNyOz:H is formed" are merely product-by-process limitations that do not structurally distinguish the claimed invention over the prior art. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of

the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe,* 227 USPQ 964, 966. The burden is on Applicant to show that the process necessarily results in structurally different product from that disclosed in the prior art.

Assuming, *arguendo,* that Applicant can prove that annealing a metal silicide layer inherently results in structurally different product; the claim would still be held obvious in view of Chen. Chen discloses annealing a metal silicide layer in a nitrogen atmosphere (col. 3, lines 49-51). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Kumar by annealing the metal silicide layer for the purpose of improving the resistivity (see col. 3, lines 49-51 of Chen).

Note that the limitations "the layer comprising SixNyOz:H protects the annealed metal silicide layer during the anneal by eliminating exposure to gaseous oxygen during the anneal" (claim 27), the limitation "means for protecting the metal silicide layer during an anneal" (claim 44), the limitation "the layer comprising SixNyOz:H is configured to reduce a stress on the gate stack that is imposed by the silicon nitride layer" (claim 27), and the limitation "the SixNyOz:H layer reduces a stress on the gate stack" are merely functional/intended use limitations that do not structurally distinguish the claimed invention over the prior art. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber,* 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). After the above combination, the

SixNyOz:H layer is inherently capable of performing the recited function. Therefore, the claim limitation is met.

Regarding claim **47**, Kumar discloses the layer 18 comprising SixNyOz:H has a thickness that ranges from a value greater than approximately 300 angstroms to a value of approximately 650 angstroms. On column 30, lines 58-61 Kumar discloses his optimized thickness of 300 Angstroms which is at the lower end ("greater than approximately 300 angstroms" ["approximately 300 angstroms" includes 300 angstroms as well as a finite range of values below 300 angstroms]) of the claimed range and thus still anticipates it. Regardless, it would have been obvious to adjust the thickness of the antireflective layer of Kumar to arrive at the specified claimed thickness range, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It is known that the thickness of antireflection layer affects the scattering of the incident light, therefore the claimed thickness is a result effective variable. The applicant admits in his disclosure on page 12, "*Such adjustment of stoichiometry can be adjusted with routine experimentation utilizing methods known to persons of ordinary skill in the art. Another way of describing the adjustment of layers 24 and 50 is that layers 24 and 50 can be tuned in thickness (by adjusting thickness of one or both of layers 24 and 50) and stoichiometry (by adjusting a stoichiometry of layer 50) such that reflection back into an overlying layer of photoresist is minimized*". Such adjustment of the ARC

thickness is only discovering an optimum value of a result effective variable that involves only routine skill in the art.

Regarding claims **36, 37, 45,** and **51,** Kumar and the APA do not disclose the specific claimed values for variable x, y, and z (specifically, x=0.5, y=0.37, and z=0.13). However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify Kumar by using the claimed values, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It is known that the composition of an antireflection layer affects the optical properties, therefore the claimed variables are result effective variables.

Regarding claims **38** and **46**, Kumar discloses the metal silicide is tungsten silicide (col. 8, lines 17 and 18) and therefore does not comprise titanium. However, Chen discloses tungsten silicide and titanium silicide can be equivalently used for the same purpose. In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Kumar by using titanium silicide for the purpose of substituting an equivalent material that is known to be used for the same purpose (see MPEP 2144.06).

Regarding claim **48**, the limitation "the means for protecting the metal silicide layer during is adapted to protect the metal silicide layer from gaseous oxygen during the anneal" is merely a recitation of intended use that does not structurally distinguish the claimed invention over the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. After the above combination, the SixNyOz:H layer is inherently capable of performing the recited function. Therefore, the claim limitation is met.

Regarding claim **49**, the limitation "the means for protecting the metal silicide layer during is adapted to alleviate stress exerted by the silicon nitride layer on layers underlying the layer comprising SixNyOz:H" is merely a recitation of intended use that does not structurally distinguish the claimed invention over the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. The SixNyOz:H layer 18 of Kumar is capable of performing the recited function, therefore the limitation is met.

Regarding claims **50**, Figures 2, 11, 14, and 17 of Kumar disclose a gate stack, comprising: a gate oxide layer 14 over a semiconductor substrate 12; a polysilicon layer 16a on the gate oxide layer; a metal silicide layer 22 on the polysilicon layer; an antireflection layer 18 comprising SixNyOz:H (col. 9, lines 1-7) formed over and in physical contact with the metal silicide layer; and a silicon nitride layer 23 (col. 9, lines

35-37) on the layer comprising SixNyOz:H having a thickness greater than 1000 angstroms [on page 4 lines 7-9 of the applicant's disclosure the applicant's admitted prior art (APA), the applicant discloses such a nitride layer having a thickness greater than 1000 Å], wherein the polysilicon layer, the gate oxide layer, the metal silicide layer, the layer comprising SixNyOz:H, and the silicon nitride layer are patterned to form the gate stack. Kumar does not disclose the specific claimed values for variable x, y, and z, and therefore does not disclose the specific composition claimed. Figure 3 of the instant application discloses an antireflective layer 26 made of SixNyOz:H, wherein x is from 0.39 to 0.65, y is from 0.02 to 0.56, and z is from 0.05 to 0.33 (see page 3, lines 13-15 of the instant specification). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made

to modify the invention of Kumar by using an antireflective layer having a composition as taught by the APA for the purpose of selecting n material known to be used for the same purpose. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.,* 325 U.S. 327, 65 USPQ 297 (1945) (see MPEP 2144.07). As indicated above, both the composition of Kumar and the composition of the APA are known, and they are known to be used for antireflective layers. The ordinary artisan would have been able to substitute the composition of Kumar with that disclosed by the APA without undue experimentation, and the results of that substitution would have been predictable. Therefore, it would have been obvious to one of ordinary skill in the art to substitute one composition for the other to achieve the predictable result of

obtaining an antireflective film. *KSR International Co. v. Teleflex Inc.,* 82 USPQ2d 1385 (2007).

Furthermore, since composition of Kumar contains all the same elements as the claimed composition (Si, N, O, and H), the difference between Kumar and the claimed invention is simply it the specific claimed values for variable x, y, and z (i.e., the specific amounts of each compositional element). However, it would have been obvious to adjust the amounts of the various different elements in the antireflective layer of Kumar to arrive at the specified claimed composition, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It is known that the composition of an antireflection layer affects the optical properties, therefore the claimed variables are result effective variables.

Kumar discloses the metal silicide is tungsten silicide (col. 8, lines 17 and 18), not titanium silicide. However, Chen discloses tungsten silicide and titanium silicide can be equivalently used for the same purpose. In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Kumar by using titanium silicide for the purpose of substituting an equivalent material that is known to be used for the same purpose (see MPEP 2144.06). The limitation "annealed" is merely a product-by-process limitation that does not structurally distinguish the claimed invention over the prior art. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is

unpatentable even though the prior product was made by a different process. *In re Thorpe,* 227 USPQ 964, 966. The burden is on Applicant to show that the process necessarily results in structurally different product from that disclosed in the prior art.

Assuming, *arguendo,* that Applicant can prove that annealing a metal silicide layer inherently results in structurally different product; the claim would still be held obvious in view of Chen. Chen discloses annealing a metal silicide layer in a nitrogen atmosphere (col. 3, lines 49-51). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Kumar by annealing the metal silicide layer for the purpose of improving the resistivity (see col. 3, lines 49-51 of Chen).

The limitation "for alleviating stress on underlying layers, canceling reflected radiation, and protecting the annealed, titanium silicide layer during an anneal from gaseous oxygen" is merely a functional/intended use limitation that does not structurally distinguish the claimed invention over the prior art. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber,* 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). After the above combination, the SixNyOz:H layer is inherently capable of performing the recited functions. Therefore the claim limitation is met.

Regarding claim **52**, Kumar discloses the layer 18 comprising SixNyOz:H has a thickness that ranges from a value greater than approximately 300 angstroms to a value of approximately 650 angstroms. On column 30, lines 58-61 Kumar discloses his optimized thickness of 300 Angstroms which is at the lower end ("greater than approximately 300 angstroms") of the claimed range and thus anticipates it. Regardless, it would have been obvious to adjust the thickness of the antireflective layer of Kumar to arrive at the specified claimed thickness range, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It is known that the thickness of antireflection layer affects the scattering of the incident light, therefore the claimed thickness is a result effective variable. The applicant admits in his disclosure on page 12, "*Such adjustment of stoichiometry can be adjusted with routine experimentation utilizing methods known to persons of ordinary skill in the art. Another way of describing the adjustment of layers 24 and 50 is that layers 24 and 50 can be tuned in thickness (by adjusting thickness of one or both of layers 24 and 50) and stoichiometry (by adjusting a stoichiometry of layer 50) such that reflection back into an overlying layer of photoresist is minimized*". Such adjustment of the ARC thickness is only discovering an optimum value of a result effective variable that involves only routine skill in the art.

Response to Arguments

5. Applicant's arguments filed 2 May 2008 have been fully considered but they are not persuasive.

6. Regarding the applicant's arguments that the Kumar reference does not disclose a silicon nitride thickness of greater than 1000 Angstroms, it is the position of the Office that the applicant's own admitted prior art discloses such a thickness on page 4 lines 7-9 where the applicant discloses such a nitride layer having a thickness greater than 1000 Å disposed on top of a SiON ARC.

7. The Applicant states *"(A)pplicants maintain that the cited references (e.g., the Kumar reference, and the Chen reference) fail to disclose, or to fairly suggest that the disclosed antireflection layer is functionally operable to reducing a stress imposed on a gate stack. Specifically, it is asserted that the disclosed antireflection layer is operable to reduce a stress that may be imposed by an adjacent silicon nitride layer. Applicants note, in particular, that the disclosed antireflection is operable to reduce stress imposed by a silicon nitride layer that has a thickness greater than 1000 Angstroms*". Note that "*the layer comprising SixNyOz:H is configured to reduce a stress on the gate stack that is imposed by the silicon nitride layer*" (claim 27), and the limitation "*the SixNyOz:H layer reduces a stress on the gate stack*" are merely functional/intended use limitations that do not structurally distinguish the claimed invention over the prior art. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-

32 (Fed. Cir. 1997). After the above combination, the SixNyOz:H layer is inherently capable of performing the recited function. Kumar (column 9 lines 1-28) creates his ARC layer by the same means as the applicant: PECVD with SiH_4 & N_2O in the presence of Helium. The applicant's disclosure has provided no process specifics as to how the silicon nitride layer is formed and it is assumed that a CVD process is employed. Kumar discloses a CVD process for formation of his the silicon nitride layer on column 9 lines 28-44. It is the position of the Office that the stress levels of Kumar's SiON:H/SiN layers must inherently have the same claimed stress properties as the applicant because they are formed by the same processes.

8. The applicant argues that *"(T)he Kumar reference also discloses an "optimized" thickness of the antireflective layer is 300 Angstroms (col. 30, lines 60-61). In contrast, in the various embodiments as disclosed in the present application, the antireflective layer may range in thickness between about 250 Angstroms and about 650 Angstroms. Accordingly, the antireflective layer in the present application may also include thicknesses that are considerably greater than those taught in the Kumar reference*". It is the position of the Office that claiming a specific thickness or range of thicknesses as the applicant has done is not novel but simply an optimization of the thickness with the goal of suppressing and absorbing reflected light (the inherent purpose of an ARC). The optimized thickness of Kumar or others may be different from the applicant based on such differences as, for example: underlying topology interference influences, or in the chosen photolithography equipment (wavelength, projection versus scan, etc), or masks (Optical Proximity Correction, Phase Shifting) or process conditions (resist

composition/properties/sensitivity, resist thickness, exposure time, DOF, etc), yet the end point of the optimization is the same: an optimized ARC thickness tuned to produce the same result: a gate stack structure as free as possible from the adverse affects of reflected incident light such as 157nm, 193nm, 248nm, 365nm, 405nm, 436nm. Because of such wide variance in photolithography equipment, the wavelengths used, the masks used, the photoresist types available, claiming a specific ARC thickness range is merely an optimization and has not produced unexpected results but rather the most effective, optimized by routine experimentation, ARC thickness for the specific process conditions facing the individual skilled artisan. It would have been obvious to adjust the thickness of the antireflective layer of Kumar to arrive at the specified claimed thicknesses, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It is known that the thickness of antireflection layer affects the scattering of the incident light, therefore the claimed thickness is a result effective variable.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Budd whose telephone number 571-272-8796. The examiner can normally be reached on Monday to Friday 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Paul Budd/

/Jerome Jackson Jr./

Primary Examiner, Art Unit 2815